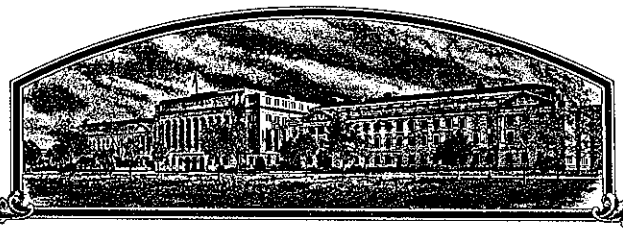
No. 8500108



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

McIntyre-Pyle Seeds, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S), AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS PRESCRIBED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Leif'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D. C. *this* 31st *day of* March *in the year of our Lord one thousand nine hundred and* eighty-eight.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture

APPROVAL EXPIRES 4-30-85

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0065

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION	3. VARIETY NAME
~~Rohm & Haas Seeds Inc.~~ MCINTYRE-PYLE SEEDS INC.	77S 4342	Leif

4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code)	5. PHONE (Include area code)	FOR OFFICIAL USE ONLY
~~Independence Mall West~~ P.O. BOX 567 ~~Philadelphia, PA 19105~~ CASSELTON, ND 58012	(701) 347-5355 ~~(215) 592-3113~~	PVPO NUMBER 8500108

6. GENUS AND SPECIES NAME	7. FAMILY NAME (Botanical)	FILING DATE / TIME
Triticum aestivum L.	Gramineae	4/12/85 8:30 [X] A.M. [ ] P.M.

8. KIND NAME	9. DATE OF DETERMINATION	FEES RECEIVED
Common wheat	September, 1981	AMOUNT FOR FILING $ 1,800 DATE 4/12/85 AMOUNT FOR CERTIFICATE $200.00 DATE March 8, 1988

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION	12. DATE OF INCORPORATION
Delaware	February, 1983

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

~~Dr. James E. Stroike~~
~~Rohm and Haas Seeds Inc.~~
~~Independence Mall West~~
~~Philadelphia, PA 19105~~

HARVEY A. PYLE
MCINTYRE-PYLE SEEDS, INC.
P.O. BOX 567
CASSELTON, ND 58012

PHONE *(Include area code)*: (701) 347-5355 ~~(215) 592-3113~~

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

a. [X] Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
b. [X] Exhibit B, Novelty Statement.
c. [X] Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
d. [X] Exhibit D, Additional Description of Variety.
e. [X] Exhibit E, Statement of the Basis of Applicant's Ownership. (SEE EXHIBIT A)

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* [X] Yes *(If "Yes," answer items 16 and 17 below)* [X] No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[X] Yes [ ] No	[X] Foundation [X] Registered [X] Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
[ ] Yes *(If "Yes," give date)*
[X] No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
[X] Yes *(If "Yes," give names of countries and dates)* United States, April, 1985
[ ] No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT	DATE
James E Stroike	3/25/85
SIGNATURE OF APPLICANT	DATE

FORM WA-470 (7-84) (Edition of 3-84 is obsolete.)

EXHIBIT A

ORIGIN AND BREEDING HISTORY OF THE VARIETY

Leif is the result of hybridization and individual plant selections from the cross Era/Buck Cimarron, made by the Northrup King Company. Our pedigree is N8688-14F-3A-2F-1A-OF.

We made the cross in the field at Eden Prairie, Minnesota in the summer of 1973. The F_1 was grown in the field at Yuma, Arizona during the winter of 1974. This was followed by individual plant selections in alternating generations between Moorhead, Minnesota and Yuma, Arizona during the F_2 through F_5 generations. In 1976, the F_6 plant progeny row at Moorhead was harvested to provide seed for preliminary yield trials in 1977. The 1977 experimental designation for Leif was 77S 4342 which remained the permanent variety number until release.

Seed from the 1977 preliminary yield trial (F_7) at Yuma, Arizona was used to plant replicated yield trials (F_8) in 1978, and also a plot increase at Yuma, Arizona. Ten heads were selected out of the small plot increase at Yuma to begin our head-row program. F_9 head-rows were grown at Oceanside, California in 1978. Ten heads were again selected out of row 78ISH13761 at Oceanside and planted in separate head-rows (F_{10}) at Yuma, Arizona in 1979. Pure-line increases of these lines were made in Yuma, Arizona in 1981. In 1981 one line, 79ASH14455, was identified to represent the variety. This line was again increased at Yuma in 1982 and 1983 to produce breeders seed, lots 82ASH35001 and 83ASH45001, respectively. Leif is then derived from an F_{10} head-row that was increased in 1981-1982 at Yuma as an F_{13}.

Leif, 77S 4342, was entered in the 1982 and 1983 Uniform Regional Hard Red Spring Wheat Nursery by the Northrup King Company. In 1982 URHRSWN tests the average yield for Leif over 15 locations was 3484 kg/ha or 102% of Era. The 1983 average yield for Leif over 17 locations was 3188kg/ha or 100% of Era.

Leif is uniform and stable. A foundation seed field was produced from lot 82ASH35001, at Moorhead, Minnesota during 1983. This Foundation Seed production was inspected and approved by the Minnesota Crop Improvement Association.

In July, 1984, Rohm and Haas Seeds Inc. purchased the midwest hard red spring wheat breeding germ plasm from Northrup King Company. The ownership of Leif was transferred to Rohm and Haas Seeds at this time.

EXHIBIT B

NOVELTY STATEMENT

Leif is most similar to "Era", but differs in plant height, heading date, beak length, and field reaction to leaf rust (Puccinia recondita) physiologic races present during the crop years 1979-1984 at Moorhead, Minnesota. Plant height for Leif averages 6 cm taller than the plant height for Era. The date of heading for Leif averages about two days earlier than that for Era. Leif has beaks that are 1.5 to 2.5 mm in length, whereas, the beaks for Era (under similar growing conditions) are 3 to 7 mm in length. Adult plant resistance of Leif to leaf rust has been observed in the field to be different than the adult plant resistance for Era.

FORM APPROVED: OMB NO. 40-R3822

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)

Rohm and Haas Seeds Inc.

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*

Independence Mall West
Philadelphia, PA 19105

FOR OFFICIAL USE ONLY

PVPO NUMBER 8500108

VARIETY NAME OR TEMPORARY DESIGNATION
Leif (77S 4342)

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[1] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____ [2] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[ ][ ][ ] FIRST FLOWERING [ ][ ][ ] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[0][2] NO. OF DAYS *EARLIER* THAN ..... [7] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][5] NO. OF DAYS *LATER* THAN ..... [8] 4 = LEMHI 5 = NUGAINES 6 = LEEDS 7 = Era 8 = Butte

5. PLANT HEIGHT *(From soil level to top of head)*:

[ ][8][6] CM. HIGH

[0][6] CM. TALLER THAN ..... [7]

[0][2] CM. SHORTER THAN ..... [8] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS 7 = Era 8 = Butte

6. PLANT COLOR AT BOOTING *(See reverse)*:

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][3] NO. OF NODES *(Originating from node above ground)*

[1][9] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][4] MM. LEAF WIDTH *(First leaf below flag leaf)*

[3][2] CM. LEAF LENGTH *(First leaf below flag leaf)*: 4

11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER *(Specify)* ______

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER *(Specify)*: ______

[|] CM. LENGTH [|] MM. WIDTH

12. GLUMES AT MATURITY:

[1] Length: 1 = SHORT *(CA. 7 mm.)* 2 = MEDIUM *(CA. 8 mm.)* 3 = LONG *(CA. 9 mm.)*

[2] Width: 1 = NARROW *(CA. 3 mm.)* 2 = MEDIUM *(CA. 3.5 mm.)* 3 = WIDE *(CA. 4 mm.)*

[4] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[~~1~~ 2] 1 = ABSENT 2 = PRESENT

[illegible] 2/12/88

15. JUVENILE PLANT GROWTH HABIT:

[3] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[3] Phenol reaction *(See instructions)*: 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER *(Specify)* ______

[0|6] MM. LENGTH [0|4] MM. WIDTH [3|6] GM. PER 1000 SEEDS

17. SEED CREASE:

[2] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[2] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST *(Races)* TNM, TLM, RKO, HJC, RTO QSH, RHR

[ ] LEAF RUST *(Races)* ______

[ ] STRIPE RUST *(Races)* ______

[ ] LOOSE SMUT

[ ] POWDERY MILDEW

[ ] BUNT

[ ] OTHER *(Specify)* ______

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY [0] APHID *(Bydv.)* [ ] GREEN BUG [ ] CEREAL LEAF BEETLE

[ ] OTHER *(Specify)* ______

HESSIAN FLY RACES: [ ] GP [ ] A [ ] B [ ] C [ ] D [ ] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Era	Seed size	Era
Leaf size	Era	Seed shape	Era
Leaf color	Olaf	Coleoptile elongation	Era
Leaf carriage	Marshall	Seedling pigmentation	Era

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

FORM LPGS 470-6 (3-79) (Reverse)

APR 12 1985

EXHIBIT D

ADDITIONAL DESCRIPTION OF THE VARIETY

Leif is a cultivar of Triticum aestium L. with spring growth habit. The kernels are hard, red, and ovate in shape. The cheeks are normally rounded. The crease is midwide and middeep to shallow. Germs are midsized and the brush is midsize and midlong. Spikes are awned, fusiform to oblong and lax to middense. Glumes are white, glabrous, short, and midwide. The glume shoulders are square and narrow to midwide. The beaks are acuminate, narrow to midwide, and 1½ to 2½ mm in length.

The coleoptile color is white and seedling anthocyanin is absent. Juvenile plant growth is erect. Plant color at booting is dark green. Waxy bloom is present on the flag leaf sheath and stem. Auricles have no anthocyanin and hairs are present. The stem internodes are hollow and contain no anthocyanin. Usually three nodes originate from the node above ground. The flag leaf is erect and twisted later becoming recurved at booting.

This variety is a tall semidwarf with height slightly shorter (2-3 cm) than Butte and about 6 cm taller than Era on the average. Relative maturity is medium-late, slightly later than Era. Heading date for Leif on the average is about two days earlier than Era and five days later than Butte. Leif is resistant to most races of stem rust (Puccinia graminis f. sp. tritici) and leaf rust (P. recondita). Seedling stem rust reactions were conducted by the Cereal Rust Laboratory in 1983. The following infection types were observed:

	RACE					
	15 B-2		151	11-32-113		
Variety	TNMN	TNMK	QSHS	RHRS	RKQS	RTQQ
Leif	0;	0;	;1	0;	0;	1
Era	;	;	3,2	;	;	;
Butte	;	;	2-	;	2	2-

Overall milling and baking score is slightly lower than Era, but protein content averages about one percent higher than Era.

EXHIBIT D

Table 1. Test weight of Leif in comparison to Era and Butte grown in replicated small plots at Moorhead, Minnesota in 1979-1984.

Year and Experiment No.		Leif kg/hl	Era kg/hl	Butte kg/hl
1979	Exp. 60	80.1	79.2	79.8
1980	Exp. 64	80.5	80.1	80.5
1981	Exp. 79	80.1	76.5	80.6
1982	Exp. 55	83.0	80.8	83.7
	Exp. 59	82.7	81.1	82.3
	Average	82.9	81.0	83.0
1983	Exp. 75	74.7	75.3	70.2
	Exp. 77	74.7	77.2	74.7
	Average	74.7	76.3	72.5
1984	Exp. 54	82.4	83.7	83.7
	Exp. 56	81.6	82.9	81.9
	Exp. 58	82.9	82.1	83.4
	Average	82.3	82.9	83.0
6 -6 Year Average		80.1	79.3	79.9

8500108

EXHIBIT D

Table 2. Heading dates of Leif in comparison to Era and Butte grown in replicated small plot trials at Moorhead, MN from 1979-1984.

Year and Experiment No.		Days from Jan. 1		
		Leif	Era	Butte
1979	Exp. 60	193	193	187
1980	Exp. 64	174	176	170
1981	Exp. 79	179	180	172
	Exp. 88	177	180	169
	Average	178	180	170.5
1982	Exp. 55	179	180	175
	Exp. 59	179	183	176
	Average	179	181.5	175.5
1983	Exp. 75	183	186	183
	Exp. 77	186	186	183
	Average	184.5	186	183
1984	Exp. 54	174	176	169
	Exp. 56	174	177	169
	Exp. 58	174	177	169
	Average	174	176.7	169
6 - Year Average		180.4	182.2	175.8

EXHIBIT D

Table 3. Relative maturity of Leif in comparison to Era and Butte grown in replicated small plot trials at Moorhead, MN from 1979-1984.

Year and Experiment No.		Relative Maturity (1-9) 1/ Leif	Era	Butte
1979	Exp. 60	7	6	6
1980	Exp. 64	5	5	3
1981	Exp. 79	5	5	6
	Exp. 88	5	5	2
	Average	5.0	5.0	4.0
1982	Exp. 55	5	3	3
	Exp. 59	4	5	3
	Average	4.5	4.0	3.0
1983	Exp. 75	3	3	6
	Exp. 77	5	4	5
	Average	4.0	3.5	5.5
1984	Exp. 54	6	6	3
	Exp. 56	4	5	2
	Exp. 58	5	3	3
	Average	5.5	4.7	2.7
6 - Year Average		5.2	4.7	4.0

1/ 1-9 scale where 1=Very Early and 9=Very Late.

8500108

EXHIBIT D

Table 4. Plant height of Leif in comparison to Era and Butte in replicated small plots at Moorhead, Minnesota from 1979-1984.

Year and Experiment No.		Height (cms) Leif	Era	Butte
1979	Exp. 60	80	71	85
1980	Exp. 64	85	83	93
1981	Exp. 79	92	85	87
	Exp. 88	89	86	85
	Average	90.5	85.5	86
1982	Exp. 55	89	74	100
	Exp. 59	90	78	92
	Average	89.5	76	96
1983	Exp. 75	81	75	80
	Exp. 77	83	77	82
	Average	82	76	81
1984	Exp. 54	92	87	89
	Exp. 56	82	82	85
	Exp. 58	86	84	85
	Average	86.7	84.3	86.3
6 - Year Average		85.6	79.3	87.9

EXHIBIT D

Table 5. Leaf rust and leaf spot field ratings of Leif in comparison with Era and Butte in replicated small plot trials grown at Moorhead, MN from 1979-1984.

Year and Experiment No.		Leaf Rust			Leaf Spot 1/		
		Leif	Era	Butte	Leif	Era	Butte
1979	Exp. 60	0	10S	0	1	1	1
1980	Exp. 64	0	5S	0	2	2	2
1981	Exp. 79	0	TS	5S	1	1	1
	Exp. 88	0	5MS	30S	7	3	5
1982	Exp. 55	0	5S	10S	0	2	3
	Exp. 59	0	10S	30S	0	1	7
1983	Exp. 75	0	10S	40S	4	3	3
	Exp. 77	0	10S	30S	2	2	2
1984	Exp. 54	0	5S	20S	2	2	5
	Exp. 56	0	5MS	20S	4	3	7
	Exp. 58	0	TS	20S	2	4	6

1/ Rating of foliar leaf diseases including Tan Spot, and Septoria species. Scale from 0-9, where 0=none and 9=complete leaf spot infection to the flag leaf.

EXHIBIT D

Table 6. Quality characteristics of Leif and checks at Moorhead, Minnesota in 1979 and 1980.

Characteristics	1979			1980		
	Leif	Era	Butte	Leif	Era	Butte
Wheat Protein	14.85	13.90	16.60	14.40	14.35	15.10
Test Weight	61.9	64.0	62.9	63.0	63.2	62.2
Milling Ext. %	68.1 G-	72.4 G	69.8 G-	70.3 G-	73.0 G	71.3 G
Farinograph						
Absorption	62.0	60.0	65.0	62.0	62.0	65.0
Peak	5.50	5.50	6550	7.25	8.0	11.0
Stability	11.00	8.50	14.00	14.50	14.501	22.00
MTI	35	40	25	25	25	10
Valorimeter	61 59	59	67	69	71	83
Flour						
Ash	.434	.442	.391	.451	.398	.386
Protein	13.65	12.90	15.45	13.30	13.35	14.10
Bake						
Absorption	65.0 G	64.0 G	68.5 VG	65.5 G+	65.0 G	68.0 VG
Mix	3.50 G	5.00 VG	4.00 G	3.75 G	4.50 VG-	5.50 G-
Dough	6 G	6 G	6 G	6 G	6 G	5 G-
Loaf Vol. cc	1000 VG	975 VG-	1000+ EX-	970 G+	980 VG-	1000 VG
Score	28 G-	33 G	31 G-	28 G-	32 G-	26 G-
Overall Score	56 G-	62 G	61 G-	57 G-	63 G	57 G-

EXHIBIT D

Table 7. Quality characteristics of Leif and checks at Moorhead, Minnesota in 1981 and 1982.

Characteristics	1981			1982		
	Leif	Era	Butte	Leif	Era	Butte
Wheat Protein	15.80	14.70	16.00	15.20	14.05	14.75
Test Weight	61.6	61.2	61.3	64.9	62.9	63.8
Milling Ext. %	68.0 G	70.5 G	68.0 G-	69.6 G-	70.6 G	70.7 G
Farinograph						
Absorption	62.3	60.7	65.0	59.6	59.3	61.6
Peak	7.00	9.75	11.25	6.00	6.25	9.00
Stability	17.00	23.00	25.00	8.00	12.00	15.50
MTI	20	15	20	55	30	25
Valorimeter	69	78	84	63	66	76
Flour						
Ash	.416	.450	.364	.393	.408	.356
Protein	14.60	13.60	14.80	12.65 G-	12.50	13.05
Bake						
Absorption	65.5 G+	63.5 G	68.0 VG-	62.5 G-	62.0 G-	64.5 G
Mix	3.50 G	6.00 G-	5.50 VG	3.75 G	5.50 VG	5.00 VG
Dough	6 G	6 G	55 G-	6 G	6 G	7 VG-
Loaf Vol. cc	1000+ EX-	1000 EX	1000 EX	855 G-	880 G-	1000 VG
Score	30 G-	33 G+	32 G-	29 G-	30 G	35 VG-
Overall Score	58 G-	64 G	63 G	58 G-	60 G	67 VG-

EXHIBIT D

Table 8. Quality characteristics of Leif and checks at Moorhead, Minnesota in 1983.

Characteristics	Leif		Solar		Waldron	
Wheat Protein	15.48		14.62		16.15	
Test Weight	57.8		58.1		58.5	
Milling Ext. %	63.7	F-	72.0	G	66.0	F
Farinograph						
Absorption	59.9		60.6		61.0	
Peak	8.25		6.75		8.50	
Stability	17.0		12.25		19.75	
MTI	30		30		20	
Valorimteter	74		66		74	
Flour						
Ash	.456		.534		.440	
Protein	12.84		12.99		14.04	
Bake						
Absorption	63.0	G	63.0	G	65.0	G
Mix	4.50	VG-	5.00	VG	5.25	VG
Dough	77	VG-	77	VG-	77	VG-
Loaf Vol. cc	1000	VG	985	VG-	980	VG-
Crumb Grain	6	G	6	G	6	G
Crumb Texture	7	VG-	6	G	6	G
Crumb Color	97		97		97	
Bake Score	35	VG-	34	G+	34	G+
Overall Score	64	G+	64	G+	62	G

8500108

14

INDEPENDENCE MALL WEST PHILADELPHIA, 19105, U.S.A. TELEPHONE (215) 592-3000
CABLE ADDRESS: ROHMHAAS TELEX 845-247 TWX 710-670-5335 TELECOPIER (215) 592-3377

ROHM AND HAAS COMPANY

January 13, 1988

Honorable Commissioner
U.S. Plant Variety Protection Office
United States Department of Agriculture
National Agricultural Library Building
Beltsville, Maryland 20705

Dear Sir:

Subject: Application No. PV #8500108 for the Wheat "Leif" filed April 12, 1985

We would like to inform you that Rohm and Haas Seeds Inc. is no longer the owner of the Wheat Variety "Leif" nor of the above application. It has been assigned to McIntyre-Pyle Seeds Inc. whose address is P.O. Box 567, Casselton, North Dakota 58012.

Very truly yours,

Howard A. Mergelkamp
Vice President
Rohm and Haas Seeds Inc.

/aar

cc: Duane McIntyre, President
McIntyre-Pyle Seeds Inc.

15

McIntyre-Pyle Seeds, Inc.

P. O. Box 567, Casselton, ND 58012
701-347-5355

January 27, 1988

Kenneth H. Evans, Commissioner
Plant Variety Protection Office
NAL Building, Rm. 500
10301 Baltimore Blvd.
Beltsville, MD 20705-2351

Dear Commissioner Evans:

Subject: Wheat Application No. 8500108, 'Leif'

Enclosed is our check #3995 in the amount of $5.00 to cover the cost of recording assignments. The new applicant representative is Mr. Harvey Pyle.

We would like to know if Plant Variety Protection has been granted on this application. If it has not, is it possible to change the application so that seed of this variety be sold by variety name only as a class of Certified seed (Title V)? If this is possible, what would be involved and what would be the cost?

Sincerely,

Duane McIntyre
Duane McIntyre, President
McIntyre-Pyle Seeds, Inc.

Harvey A Pyle
Harvey Pyle, Applicant Representative
McIntyre-Pyle Seeds, Inc.

16